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I. Solution by H. C. WHITAKER, A. M., M. E., Professor of Mathematics, Manual Training School, Philadelphia, Pennsylvania.

If we denote taking one person one mile by a person-mile, then the total person-miles was 514 and the cost of each of them was 4.8638 cents; the cost of taking A and B 144 miles was \$7 each; the cost of taking C 124 miles was \$6.03; the cost of taking D 72 miles was \$3.50, and the cost of taking E 30 miles was \$1.46.

II. Solution by F. M. McGAW, Bordentown, New Jersey; G. B. M. ZERR, A. M., Ph. D., Professor of Mathematics and Applied Science, Texarkana College, Texarkana, Arkansas-Texas, and H. C. WILKES, Skull Run, West Virginia.

Five men ride 30 miles; four, 42 miles; three, 52 miles; and two, 20 miles.

$\therefore$ E pays for $\frac{1}{5}$ of 30=6 miles.

D pays for $\frac{1}{4}$ of $30+\frac{1}{4}$ of $42=16\frac{1}{2}$ miles.

C pays for $\frac{1}{3}$ of $30+\frac{1}{3}$ of $42+\frac{1}{3}$ of $52=33\frac{5}{6}$ miles.

B pays for $\frac{1}{2}$ of $30+\frac{1}{2}$ of $42+\frac{1}{2}$ of $52+\frac{1}{2}$ of $20=43\frac{5}{6}$ miles.

A pays for $\frac{1}{2}$ of $30+\frac{1}{2}$ of $42+\frac{1}{2}$ of $52+\frac{1}{2}$ of $20=43\frac{5}{6}$ miles.

$144:43\frac{5}{6}=\$25:\$7.609\frac{10}{11}\frac{3}{8}$, share of each A and B.

$144:33\frac{5}{6}=\$25:\$5.873\frac{91}{10}\frac{1}{8}$, share of C.

$144:16\frac{1}{2}=\$25:\$2.864\frac{7}{11}\frac{1}{2}$, share of D.

$144:6=\$25:\$1.041\frac{2}{3}$, share of E.

III. Solution by A. P. REED, A. M., Clarence, Missouri, and J. C. CORBIN, Pine Bluff, Arkansas.

144 miles=distance A rides, 144 miles=distance B rides, 124 miles=distance C rides, 72 miles=distance D rides, and 30 miles=distance E rides.

They should each pay in proportion to the distance each rides. Hence

$\frac{144}{514}$ of $\$25=\$7.00\frac{10}{257}$=amount A should pay.

$\frac{144}{514}$ of $\$25=\$7.00\frac{10}{257}$=amount B should pay.

$\frac{124}{514}$ of $\$25=\$6.03\frac{83}{257}$=amount C should pay.

$\frac{72}{514}$ of $\$25=\$3.50\frac{50}{257}$=amount D should pay.

$\frac{30}{514}$ of $\$25=\$1.45\frac{33}{257}$=amount E should pay.

[NOTE. Greenleaf gives the answers as obtained in the second solution. But we think it is best to solve the problem on the principle that each pay in proportion to the distance he rides. This principle prevails in practice at the present time and is just in its application. EDITOR.]

PROBLEMS.

60. Proposed by J. K. ELLWOOD, A. M., Principal of Colfax School, Pittsburg, Pennsylvania.

A pipe 1 foot long and $\frac{27}{34}$ inch in diameter has a half-inch orifice and weighs $1\frac{1}{4}$ pounds. What is the diameter of a pipe of the same length and orifice, but weighing 41 ounces?

61. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in Irving College, Mechanicsburg, Pennsylvania.

Insured my store for a/bth=$\frac{3}{4}$th part of its value, at $r=1\frac{1}{2}$ per cent.; but soon afterward the store was burned down, and my loss over the insurance was $\$L=\$4150$. What was the value of my store?